

American Fern Journal

Vol. 21

JANUARY-MARCH, 1931

No. 1

Notes on a New Jersey Fern Garden—I.

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The fern garden, a portion of which is shown in the accompanying illustration, is located in West Orange on the eastern slope of First Orange Mountain. The garden was of slow development and became a fern garden largely because of changing conditions.

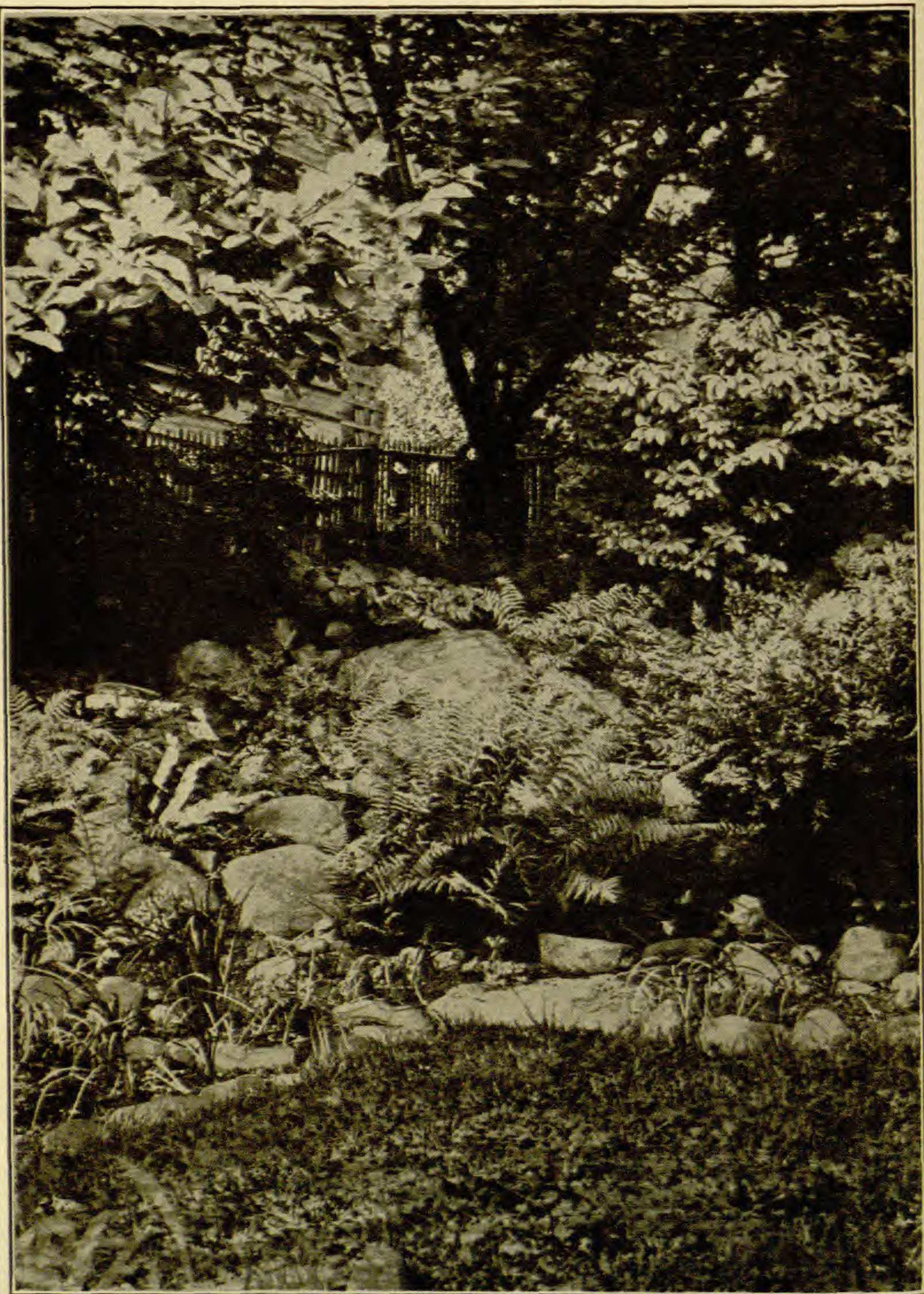
A new house built close to the south lot line and the growth of trees set out some years earlier made it necessary to find plants suitable for a shady location.

The natural slope was accentuated by removing the soil for a depth of from two to four feet from the central portion of the plot to give a sunken garden effect, with banks on three sides and the middle part sloping gradually toward the east.

The fern garden is on the shady south side facing north, while the other two sides facing east and south are being developed as a rock garden. The central portion has been seeded as a lawn, but it is planned ultimately to include a small irregular pool for water plants and additional flower beds.

The illustration shows the southwest angle where rock and fern gardens meet and a path of flat stones. Rustic steps lead up at the right and turn to the left around

[Volume 20, No. 4 of the JOURNAL, pages 129-164, plates 7-9, was issued Jan. 6, 1931.]



PART OF THE FERN GARDEN.

the flowering cherry tree, of which only the dark trunk and branches are visible in the photograph.

Along the lot line at the back, a cleft chestnut fence makes an attractive back-ground for the ferns and helps to conceal the lower portions of the neighboring house. In fact the house is almost non-existent as far as the garden is concerned, as the cherry tree, a white pine, mountain ash and other trees and shrubs almost completely screen it and give the effect of a bit of woodland. A large flat stone marks the entrance to the path through the "woods."

On the right is a royal fern (*Osmunda regalis*); this was found six or seven years ago, an old and stunted little fern growing in the middle of a dry field—probably a survival of a departed wooded tract. It was moved to its present position, which it found to its liking, and each year it grows larger and taller until it has become a fine specimen with fronds three feet six inches, or more, in height. A number of royal fern sporelings have come up near by which will have to be moved before they grow so large that they will crowd their neighbors.

At the center and to the left of *Osmunda regalis* is a marsh fern clump (*Dryopteris Thelypteris*) which has to be watched lest it get out of bounds. It is an attractive fern when kept as a specimen, but its numerous sporelings must be weeded out, as together with the sporelings of lady fern (*Athyrium angustum*) and of bladder fern (*Cystopteris bulbifera*) they would soon take possession of all available space. Generally these young ferns are permitted to grow where they come up, for a year or two as, while small, they make beautiful little rock ferns.

Other ferns along the path are fragile bladder (*Cystopteris fragilis*), rusty woodsia (*Woodsia ilvensis*), Christ-

mas fern (*Polystichum acrostichoides*), and ebony spleenwort (*Asplenium platyneuron*).

Around the trunk of the cherry tree is a thriving colony of *Dryopteris spinulosa* and *Dryopteris intermedia*. These also sow themselves freely; *spinulosa* especially has appeared here and there among the other ferns.

In the distance against the fence may be seen a tall Silvery Spleenwort (*Athyrium acrostichoides*) in company with marginal shield fern (*Dryopteris marginalis*), lady fern (*Athyrium angustum*), New York fern (*Dryopteris noveboracensis*) and others.

The stones are local field stones found on the place or dug up in the process of grading. They were not ideal material for the purpose, being mostly too round, but were used, as they were at hand, and have been arranged to give as nearly as possible the appearance of a natural outcropping. To begin with there was nothing but the red clay soil so typical of northern New Jersey, but gradually this was removed to a depth of eight inches to a foot and as stones were set in place new soil was put in consisting of varying mixtures of black wood-mold, loam, peat-moss, sand and gravel.

In moving ferns it is found a good plan to observe the conditions under which they grow—exposure, soil, drainage, etc.—and to try to reproduce as nearly as possible the same conditions in the garden.

Of the forty odd ferns so far tried, all have done well except some of the *Botrychiums*. The latter have continued to grow over a period of several years, but have up to date produced only undersized sterile fronds. Further experimenting will no doubt solve the problem of their requirements.

Besides the varying shades of green displayed by the ferns, this corner of the garden is brilliant with other

colors, especially in the spring when the double flowering cherry is loaded with its clusters of rose-like flowers.

Above the large stone at the center is a group of white trillium (wake-robin) and the pink flowers of *Daphne cneorum* and in the shadow to the left are fine clumps of hepaticas—pink and blue. Above to the left is a dwarf magnolia with large white blossoms that lighten up the garden for several weeks in the early spring.

Scattered about on the miniature cliffs are early saxifrages, mossy saxifrages in pink and white, wintergreen, partridge berries and other wood flowers. Yellow lady slippers (*Cypripedium pubescens*) seem well naturalized and have blossomed for a number of years.

At the upper right a group of *Azalea mollis* adds brilliancy in the late spring with a glowing mass of orange, yellow and salmon pink flowers and just below are clustered spikes of coral bells (*Heuchera sanguinea*).

At the foot of the rocks, below and in front of the ferns are groups of shade-loving dwarf irises—*cristata* in two shades of lavender and the white variety, *cristata alba*, *minuta* with yellow flowers and *gracilipes* with innumerable dainty flowers of pale lavender which remain in bloom over a long period of four weeks or more. This year *Iris verna* has been placed among the rocks; it has bloomed in another part of the garden and it is hoped it may be naturalized among the ferns.

Late in summer there are pink *Anemone hupehensis*—some may be seen in the picture against and to the left of the dark trunk of the cherry tree. The stones of the path itself are covered in places with patches of *Sedum acre* bright with its tiny yellow flowers and in the crevices are little yellow violets from western New York.

POLYPODIUMS

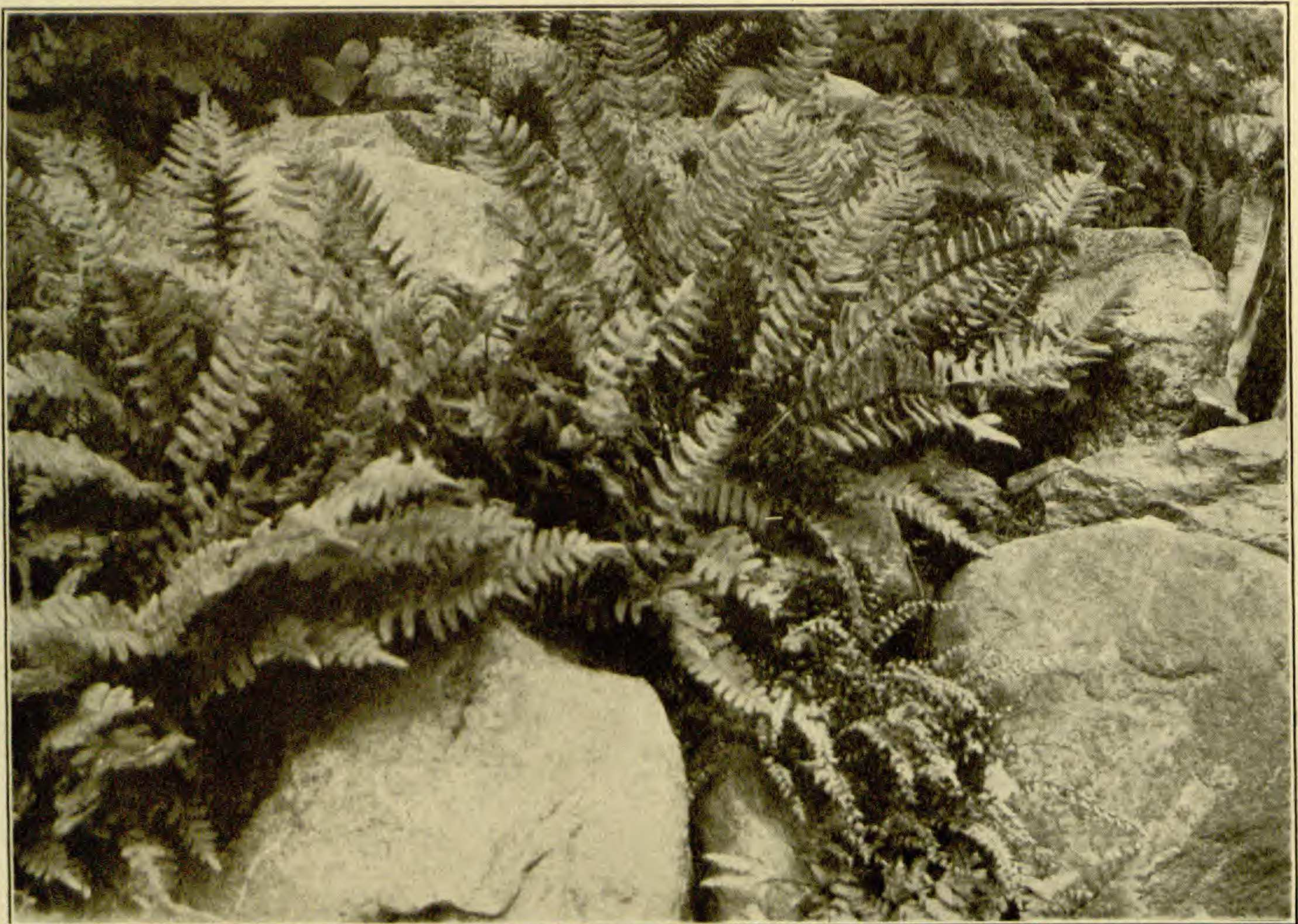
When the first stones were being arranged, preliminary to the planting of ferns, it was found that several of the

larger stones fitted together very snugly making a natural looking ledge with a long nearly horizontal fissure; just the place for rock ferns. It seemed to suggest *Polypodium virginianum*. A few days later a visit was made to a shady traprock hillside where polypody grows in abundance and after a short search I found just what was wanted, a long row of the ferns growing between layers of rock which, luckily, it was found could be easily separated. A flat mat of roots imbedded in black leaf mold, with the green fronds like a fringe all along one edge, was extracted without the need of any cutting or subdividing.

This polypody mat was rolled up, for convenience in carrying, and was, later, found to fit almost exactly into the place prepared for it. The upper stones were raised and the mat of roots set in place, the stones were put back carefully so as not to crush the plants and to make sure that all possible voids were packed with leaf mold and sand; then a good watering and so far as any one could tell it might have been a long established planting. It may be noted that the slope of rock face and the dip of the fissure permits rain water or spray from a hose to run down naturally into the fissure and to reach the roots.

This colony of polypody has now been in place six or seven years; it has received almost no care except for frequent watering during dry spells and a general cleaning up in the spring to remove old dry fronds and leaves that have lodged among the ferns during the winter.

Just below the polypody, as may be seen in the photograph, is a colony of maidenhair spleenwort (*Asplenium Trichomanes*). These were set in place about the same time as the *Polypodium* and are well established.



POLYPODIUM VIRGINIANUM, IN PLACE ABOUT SEVEN YEARS.

The vertical fissure in which they grow seems, however, to be a favorite lodging place for spores of other ferns, and every once in a while it is necessary to remove intruding little plants of Lady, marsh or fragile bladder ferns.

Just to the right in a cool spot protected from the sun, is a thriving specimen of Hart's-tongue fern.

PHEGOPTERIS HEXAGONOPTERA

Broad Beech fern occurs locally in West Orange; it may be found in abundance within a few minutes' walk of my home and was therefore, naturally, one of the first to find a place in the fern garden.

It grows in a sunny open woods on the easterly slope of First Orange Mountain where the ground is quite wet in the spring but dry in summer. It is associated with Interrupted fern (*Osmunda Claytoniana*), New York and Lady fern all of which, are even more abundant than Broad Beech fern.

Gathering ferns for one's garden is not always as simple as might be expected. In this case I started out for a walk one Sunday afternoon, with my wife, intending to stop on the way for a few plants of *Phegopteris hexagonoptera*. We had found a fine specimen and as I was stooping to put aside the weeds and grasses growing around it, my hand evidently came in contact with a hornets' nest. The fiery insects swarmed at me and before I could beat a retreat they registered five stings. One of them made a beeline for my wife, who was some twenty feet away. She thought she had been hit by a red hot cinder, but soon realized what was up and put distance between herself and the hornets.

Not wishing to lose the fern I soon went back and strange to say, although the hornets flew about me they



PHEGopteris hexagonoptera, in place seven years; Holly Fern, one year.

did not attack again and I obtained the fern without any more stings.

The Broad Beech fern is easily grown and no special preparation of soil was made. After planting, some compost and leaf mold was scattered in about the plants.

In the garden they have grown larger than they were in the woods and make a beautiful background for my bog garden, which was an addition made to the fern garden several years later. One of the fronds recently measured was twelve inches in length and fourteen inches wide. Including the stipe the total length was well over two feet.

The illustration shows also some plants of Braun's Holly fern (*Polystichum Braunii*). These were sent to me from Massachusetts so I am not familiar with their natural habitat, but I assumed they needed good drainage and planted them in a raised bed of stones well packed with sand and gravel mixed with a little humus and near the surface a richer mixture composed of sand, humus and peat moss. They are in a position to get a little morning sun and they seem perfectly at home as they keep in fine condition and have grown much larger than when first received in the spring of 1929.

WEST ORANGE, NEW JERSEY